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ABSTRACT

This study examined whether preservice teachers can infer the major concepts that a subject uses in his or her thinking on complex problems if the subject thinks out loud. Twenty-six students in a teacher certification program, 17 college graduates with 5 years of full-time work experience, and 16 college graduates with 10 years of full-time work experience participated. They thought out loud while explaining how they would get to understand something they didn't understand and how a teacher (or trainer/workshop leader) could best help them to learn. Students and graduates reflected more agreement on such concepts as verbal, self-control, friendliness, logical, trust, and patience than they did on other concepts. Students reflected the concepts of inner states, control of environment, visual, influence of peers, and faith, while graduates reflected the concepts of handling novelty, beauty, musical/rhythmical, scientific, abstract patterns, and flexibility. Key concepts are arranged to form concept strings, in order to stimulate creative cognitive flows for development of hypotheses. A schematic is provided as a frame of reference for viewing the concepts from a variety of standpoints, such as business, social, psychological, educational, and religious. (Contains 10 references.) (JDD)

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ED 363 582

Students' Views of Their and Others' Thinking: Underlying Concepts Involved in Answering Divergent Questions

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Excerpts presented at the annual meeting of the American Educational Research Association

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The power of perception can be employed successfully by teachers. Advanced college students who are preparing to be teachers frequently reflect in their methods classes about this. Many of them speak of their self-perception and of their being able to identify the major concepts which they use in their thinking on complex problems. Most of them talk about their perception of others. Some think that when they are doing face-to-face interviews and observations with others they can infer the major concepts these people use in handling complex concerns. They indicate that such concerns include answering certain divergent questions. Many students think that especially if the subject thinks out loud the major concepts can be inferred by them. Whether these preservice teachers can infer such concepts is a concern which is clearly not easily answered.

Anticipations/thrusts

To contribute research on this latter concern is the object of this investigation. The study is a further contribution to understanding the nature and characteristics of thinking, this time through a selected rubric of students' views of their and others' thinking. The idea of the research is to provide an enlarged perspective--qualitative: conceptual/philosophical--in two dimensions. These are a basis for insight into how students view their and others' thinking and, thus, also a basis for hypotheses for better understanding thinking itself. These dimensions encourage such thinking as how underlying concepts are brought to bear in reality and action, especially as in handling such indeterminate situations as those in answering some divergent questions.

In providing a foundation for improved understanding of how students view their and other's thinking, the study may stimulate better insight into how students feel that they think in a given indeterminate situation and how they feel that graduates with five and ten years of work experience think in such a situation. Contributing ideas of future teachers' perceptions about underlying concepts at play in the thinking in the indeterminate situation may shed light on the broader nature and characteristics of thinking. Dimensions of such bases for personal consideration of thinking and for generation of hypotheses for further, perhaps a comprehensive inquiry of, thinking may be of use to many varieties of school-based and business-based educators regardless of their work location and assignment function.

As a portion of a larger investigation, this study concerns the students' inferences of major underlying concepts that they feel that they evidenced (a) in their own thinking, (b) in the thinking of the graduates with five years of full-time work experience, and (c) in the thinking of the graduates with ten years of full-time work experience. Each subject in the three groups responded to two indeterminate situations presented as open-ended questions.

Key directional clusters. Key data and their flows generated/captured and studied to derive foundational thrusts as minimum clusters in the study include major agreements and major differences:

--between the concepts felt to be evidenced in the thinking of the students and those felt to be evidenced in the thinking of the graduates with five years of full-time work experience;

--between the concepts felt to be evidenced in the thinking of the students and those felt to be evidenced in the thinking of the graduates with ten years of full-time work experience; and

--between the concepts felt to be evidenced in the thinking of the graduates with five years of full-time work experience and those felt to be evidenced in the thinking of the graduates with ten years of full-time work experience.
//

Use of Sources and Data

Qualitative methods yielded this conceptual/philosophic study. Twenty six students in a teacher certification program in a large midwestern university, 17 college graduates with five years of full-time work experience, and 16 college graduates with ten years of full-time work experience participated. They thought out loud while answering how they would get to understand something they didn't understand and how a teacher (or trainer/workshop leader) could best help them to learn.
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Major Results and Insights

The reader will note that throughout this report unless otherwise indicated a key word from each category of concepts is used to represent that entire category. The categories are described in the previous section. Also to aid the reader, the concepts below which are in list form are presented in declining order of strength: when agreements are thus listed, the strongest are presented first, followed by as many as two categories of those with lesser strength; when disagreements are listed, the strongest are listed first. EXTRACTS, Martin

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Students and graduates with five years of work experience. The students and these graduates, viewed as one group, reflect the same number of concepts (4) on which strongest agreement exists as concepts on which strongest differences exist. They also have the same number of concepts (11) on which strong, great, and much differences, considered major differences, exist as they have concepts on which strong, great, and much agreement, considered major agreements, exists.

//

Students and graduates with ten years of work experience. The students and these graduates, viewed as one group, reflect one more concept on which strongest agreement exists (4) than concepts on which strongest differences exist. They also have four more concepts on which the strong, great, and much differences, considered major differences, exist (11) than concepts on which strong, great, and much agreement, considered major agreements, exists.

//

Graduates. These two groups of graduates with work experience, viewed as one group, reflect one more concept on which they have strongest differences (4) than on concepts on which they have strongest agreement. These groups of graduates also have six more concepts on which strong, great, and much differences, considered major differences, exist (13) than they have concepts on which strong, great, and much agreement, considered major agreements, exists.

//

Other Generalizations

Although bases indicated in the purposes of the study have been presented for the reader in the previous section around the three key directional probes, further bases, guides, and related generalizations for the reader are included below.

Students and graduates. Insights about the students and graduates (with the two groups of graduates studied together and considered as one large group) such as the following should provide the reader another basis for insights and for hypotheses for further study:

Both the students and the graduates may tend to reflect more agreement on these concepts (presented in clusters arranged in generally declining strength):

verbal, self-control, friendliness

logical

trust

patience, understanding-oriented

Of the differences between the students and the graduates, the students may tend to reflect more these concepts (presented in clusters arranged in generally declining strength):

inner states

control environment, visual

influence of peers

faith

However, the graduates may tend to reflect these more:

handle novelty

beauty

musical/rhythmical

scientific, abstract patterns, flexibility

//

The students and graduates, viewed as one group, reflect two more concepts on which strongest agreement exists (3) than concepts on which strongest differences exist.

//

The students and graduates have four more concepts on which strong, great, and much difference, considered major differences, exist (11) than they have concepts on which the strong, great, and much agreement, considered major agreements, exists.

//

The concept **awareness of spiritual** was more evidenced by the graduates than was **inner states [intrapersonal, self-reflection, metacognition]**, just the reverse of how these were evidenced by the students.)

//

--<u>Other ideas about students and graduates</u>. The students felt that they could evidence other ideas; such ideas may aid the reader in developing hypotheses: The students' interest as well as that of the graduates typically flows to people/objects/action rather than to the inner world of concepts/ideas, although the interest is much less for the students with ten years of full-time work experience. The students and the graduates with ten years of work experience generally prefer to perceive the possibilities/meanings/relationships rather than the immediate/real/practical facts, whereas the graduates with five years of full-time work experience prefer the reverse.

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The students and graduates with five years of work experience generally prefer to decide/judge subjectively/personally/weighing values of choices and how they matter to others, although the graduates with ten years of work experience generally prefer to decide/judge objectively/impersonally/considering causes of events and where decisions may lead. The students generally and the graduates typically prefer to live in a decisive/planned/orderly way/aiming to regulate and control events rather than in a spontaneous/flexible way/aiming to understand life and adapt to it.
//

Graduates. Ideas about the two groups of graduates such as the following should provide the reader with another basis for insights and for hypotheses for further study.

Both the graduates with five years of full time work experience and the graduates with ten years of full time work experience may tend to reflect more agreement on these concepts (presented in clusters arranged in generally declining strength):

verbal, self-control, friendliness

logical

goodness, flexibility, trust

Of the differences between the two groups of graduates, the graduates with five years of work experience may tend to reflect more these concepts (presented in clusters arranged in generally declining strength):

steadfastness, virtue, joy

musical/rhythmical

person to person, humor, patience, histrionics, acceptable emotions, insight

However, the graduates with ten years of work experience may tend to reflect these more:

understanding-oriented

visual, peace, hope, wisdom-oriented

scientific, faith

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--Other ideas about graduates. The interest of the graduates typically flows to people/objects/action rather than to the inner world of concepts/ideas, with such interest of the graduates with five years of full-time work experience much stronger than that of the graduates with ten years of full-time work experience. The graduates with five years of full-time work experience generally prefer to perceive the immediate/real/practical facts rather than possibilities/meanings/relationships, whereas the graduates with ten years of full-time work experience generally prefer the reverse.

The graduates with five years of work experience generally prefer to decide/judge subjectively/personally/weighing values of choices and how they matter to others rather than objectively/impersonally/considering causes of events and where decisions may lead, although the graduates with ten years of the work experience generally prefer the reverse. Both groups of graduates typically prefer to live in a decisive/planned/orderly way/aiming to regulate and control events rather than in a spontaneous/flexible way/aiming to understand life and adapt to it.

//

Concept display guides. The reader can develop hypotheses by reflecting upon the results and insights in the previous section as well as the basis above and the basis below in this section. Additionally, mention of key concepts as arranged below to form a concept string might enhance such development. The reader will note that the headings of the displays as well as the content are expressed as concept strings.

--Students and graduates: For example, viewing the concepts (typically in declining order from the most agreed upon, by category) on which both the student group and the graduate group agree may yield, in some string manner, creative cognitive flows for the reader. The following display of concepts drawn from a total cluster comprised of students and both groups of graduates, as associated, is thus provided for such stimulation:

//

The reader may decide to hook categories together (the concepts from each category typically in declining order) as follows:

Students/graduates other characteristics	**Agreements**	**Learning/knowing and**
friendliness	**trust**	**patience**
self-control	**logical**	**trust**
understanding-oriented		

//

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//

The reader may benefit from otherwise selecting the concepts in a manner reflecting mixed categories and orders, such as in the following:

Students/graduates Agreements (random)
Learning/knowing and other characteristics

//

understanding-oriented logical self-control

patience verbal friendliness trust

//

The reader should utilize displays as being only a starting point for consideration of hypotheses. The reader's creativity can readily extend such development.

--Specific concept strings--students.

//

A comprehensive mixture for the students might be:

control environment visual patience
understanding-oriented

//

inner states influence of peers faith trust

--Specific concept strings--graduates.

//

A comprehensive mixture for the graduates might be:

understanding-oriented scientific patience
flexibility self-control

abstract patterns beauty musical/rhythmical

//

The reader's creativity can easily extend such strings for development of hypotheses. The reader may also desire to add other personal and professional insights as concepts in such strings.

--Specific concept strings--graduates with five years of full time work experience and graduates with ten years of full time work experience:

//

The reader may benefit from otherwise stressing the concepts in a manner reflecting mixed categories and order, such as in the following:

Grad--5/grad--10 Agreements (random)
Learning/knowing and other characteristics

trust friendliness goodness
//
logical flexibility verbal friendliness
//

The reader should utilize displays as being only a starting point for consideration of hypotheses. The reader's creativity can readily extend such development.

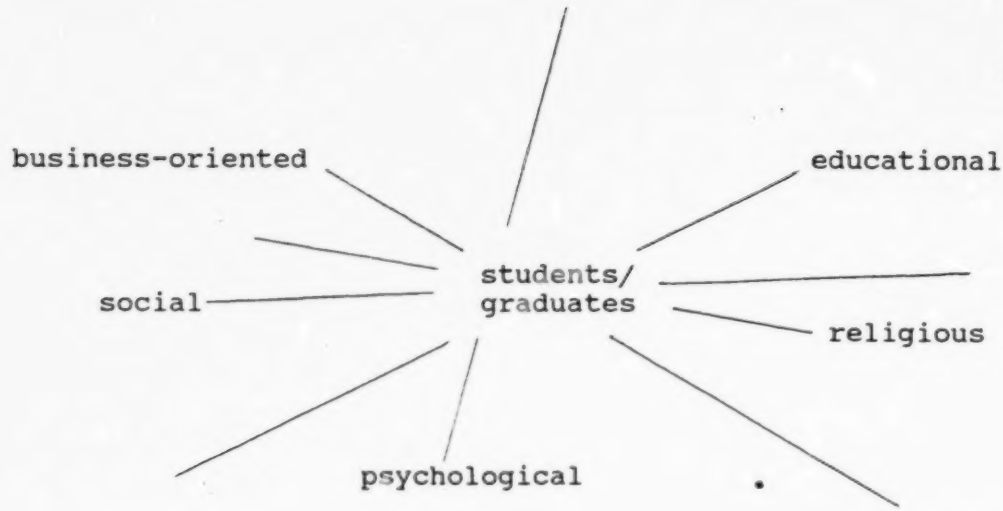
--Specific concept strings--graduates with five years of work experience:
//
A comprehensive mixture for the graduates might be:
//
histrionics self-control flexibility patience
acceptable emotions musical/rhythmical
//
patience joy goodness virtue steadfastness
person to person
//

--Specific concept strings--graduates with ten years of work experience.
//
A comprehensive mixture for the graduates might be:
//
peace wisdom-oriented faith hope
// **verbal**

self-control visual flexibility scientific
logical understanding-oriented

The reader's creativity can easily extend such strings for development of hypotheses. The reader may also desire to add other professional and personal thoughts as concepts in such strings.

Frames of reference: schematic. The following schematic is provided the reader as another type of stimulant for viewing the concepts regarding the students, the graduates with five years of work experience, and the graduates with ten years of work experience. Such an expandable frame of reference may aid the reader's insights as prompts for hypotheses to guide further consideration and study. EXTRACTS, Martin



Viewing the graduates with work experience and/or the students from such a variety of standpoints as those in the schematic could provide excellent bases for hypotheses. Note that in the ideas below each idea in a category could equally adjust to other categories. Consider such examples as these applied views of concepts as prompts for hypotheses:

Affect of the image of the job on the image of the employee and the affect of the image of the employee on the image of the job

Nature of work germane to use of teams and to enriching the company's organizational structure

Underlying tenets in employees' personal-assignment interplays from cognitive and affective analyses

Differences in training needs of employees with varied degrees of experience

Employee's attitude about important concepts entailed in the work as affecting work performance

--points of view from business

Purposes and mental models of metacognitive strategies as aids in thinking/learning/teaching

Knowledge's limits/role in attitudes influencing a student's views

Understanding interactions of intelligences and learning styles entailed in a student's perception/learning

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Impact of "religious" values and politically correct attitudes on perception, learning, and teaching

Challenges to quality of learning from generating, processing/constructing, and creating conscious and unconscious perceptive knowledge

--points of view from education

Affect's impacts on behavior

Innate and emotional forces in human functioning

Shame/nonshame and radiant positive emotions (such as happiness/excitement/joy) in guiding one's perceptions and behavior

Cognition's and affect's limits in perceptions

Attitudes toward others which reflect attitudes toward self and others

--points of view from psychology/psychiatry

Social and environmental influences which are stimulating the individual's functioning in specific situations

Diversity's influences on creativity in the workplace

Innate social needs of students and employees

Dimensions of quality of knowledge and social insight which are reflected by quality of perception

What one sees of himself/herself in other people

Cooperative, negotiating, and social functioning of groups and businesses

--points of view from society

Relationships of spiritual and physical/material talents

Affective domain's and political correctness' underpinnings in epistemological and ontological paradigms

Emotions and cognition as spiritual aspects of existence

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Spiritual links of thought and action

Forces in operation in answering divergent/indeterminate questions

--points of view from religion

Such a schematic and such examples are simply bases for the development of hypotheses. The reader's creativity can quickly extend such generation of hypotheses to guide further curiosity and research.

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